The Office Action of July 14, 2004 has been carefully considered.

Objection has been raised to the specification, and the appropriate amendment has been made.

Claims 1, 2, 6-11, 14-17, 20-22 and 25-29 have been rejected under 35 USC 112, 2nd paragraph on a number of grounds. The claims have now been extensively amended in order to remove the cited objections, and withdrawal of this rejection is requested.

Claims 1-4 have been rejected under 35 USC 103(a) over Parruck (US 6,751,214) in view of Slater (US 6,731,656). It is alleged that Parruck shows all the steps of the method except processing the services in their original protocols into packets, while Slater, in an analogous art, discloses processing services in their original protocols.

The claimed invention relates to a method for data transmission over an optical network, the method including collecting, in at least one service collection unit, services data in their original protocols from a plurality of different types of services to be transmitted, each service collection unit including an optical transceiver; processing the services data in their original protocols into packets, and converting the packets into optical signals on an optical fiber for transmission into a metro network. The method further includes sorting the services data from a plurality of such packets in at least one aggregator module, each aggregator module having an aggregator optical transceiver coupled for optical communication to the service collection units.

It is a particular feature of the invention that the service collection unit collects service data from a plurality of different types of services (ATM, TDM, Ethernet, etc.) and

transmits them, without converting them from their original protocols, over a data transmission network, and that the aggregator module receives the transmission and merely sorts the services according to service type and/or destination, without converting them back from a transmission protocol. The cited prior art is not capable of doing this.

The reference to Parruck discloses a method for dynamically allocating bandwidth among ATM cells and packets in an aggregation multiplexer. As noted in the Office Action, all the services in Parruck arrive in the multiplexer already converted into packet form or ATM form by a packet protocol or an ATM protocol, so they are not in their original services protocol. Furthermore, this method is suitable for data services only. For example, the Parruck method cannot be used to transport TDM (voice) services, since they are not capable of being converted into either packets or ATM cells.

According to the invention, on the other hand, a multiplicity of services can be transmitted in native form (their original protocols). Thus, ATM services, TDM services, Ethernet services, and other types of services can all be combined for transmittal, without being converted to ATM or TDM or other different protocol.

The patent to Slater describes a communication system which utilizes inverse multiplexing to transfer wideband signals over a plurality of narrow band links. Incoming data is inverse multiplexed in a byte format, regardless of packet boundaries, into virtual containers. Overhead signals are generated to enable the original data to be reassembled at the receiving end.

The method described in the Slater patent includes dividing the high bandwidth channel over which the traffic is transmitted into a plurality of low bandwidth TDM channels.

This patent uses IMA, not packets. A small piece (about 2Mbit/s) is cut off of each incoming packet, in turn, and put into a different virtual TDM channel for transmission. At the receiver, the small pieces are reassembled into the original packets. Thus, for Slater, TDM is the transmission protocol, rather than a kind of service that can be sent over the network, as in the method of the invention.

The invention, on the other hand, segments bit rates, so it sends whole packets formed from bit stream segments of services in their native form over one or more broadband channels, which are not virtual channels. The bit stream segments can be in TDM protocol, ATM protocol, Ethernet protocol, or other protocol, with each at its own bit rate, which need not be uniform among the types of services.

The Office Action alleges that a person of ordinary skill in the art would have been motivated to employ Slater in Parruck in order to obtain signal segmentation. It is respectfully submitted that Slater cannot be combined with Parruck. Parruck treats ATM cells like packets and can only send ATM cells and packets over a single bandwidth channel. Slater does not provide either ATM cells or packets, but rather, Slater takes apart packets so as to be able to send the data inside over a plurality of virtual low band channels. The combination of Parruck and Slater does not provide any additional advantage and does not solve the multi-service transport problem. ATM cells and packets will still be transported together in one logical combined channel, and the only difference will be that the bandwidth of this channel will be divided in several low bit rate channels. Further, there is no provision in Parruck for reassembling the pieces of packets, and such interlacing is not possible with many kinds of transport.

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Claim 1 has now been amended in order to clarify and emphasize the crucial distinctions between the invention and the systems disclosed by the Parruck and Slater patents. Specifically, claim 1 has been amended to clarify that services data to be transmitted from a plurality of different types of services, which may be data and/or voice in their original protocols, are collected in at least one service collection unit, where they are processed into packets while still in their original protocols. Support for this amendment can be found throughout the original specification, for example on page 4, lines 5-7, page 6, lines 5-9 and 12-14, and page 7, lines 17-22. Further, as claimed more specifically in new claims 30 and 31, after being transmitted, the services data are sorted and aggregated in an aggregator module either according to services (the same type of services together, regardless of final destination) or according to destination (different types of services together until they reach the destination).

Regarding claim 3, Applicants are not claiming loading transmission frames onto an optical fiber *per se*, but only in the context of the method of claims 1 and 2. Claim 4 has been canceled.

Claim 5 is rejected under 35 USC 103(a) as being unpatentable over Parruck and Slater in view of Huang (US 6,266,345). The patents to Parruck and Slater have been discussed in detail above.

The patent to Huang discloses a method and apparatus for dynamic allocation of bandwidth to data with varying bit rates, in which a plurality of virtual channels to transmit data are allocated on a transmission medium for transmitting data at multiple different frequencies. As in Slater, data is transmitted on fixed virtual channels in the transport medium.

The channels, in Huang, are allocated according to the requirements of the various services. Thus, it is impossible to combine the virtual channels of Huang with the ATM and packet cells of Parruck, since they are totally different methods.

Claim 5 has been amended in order to clarify and emphasize the crucial distinctions between the invention and the methods disclosed by the Parruck, Slater and Huang patents. Specifically, claim 5 has been amended to clarify that the tagged segments are encapsulated into Packet-over-SONET (PoS) frames, which are standard frames well known in the art and recognized by telecommunications systems around the world. This step is not possible using the methods of the above patents.

The allowability of claims 12, 13, 18, 19, 23 and 24 over the art of record has been noted.

Claim 1 has been provisionally rejected under 35 USC 101 as claiming the same invention as claim 1 of Serial No. 09/753,513 and claim 5 has been provisionally rejected under 35 USC 101 over claim 1 of Serial No. 09/753,400. As no claim has yet been found allowable, and the present claims have been amended, no further action with regard to this rejection is thought to be necessary at this time.

New claim 32 corresponds to original claim 2, but depends from claim 31, rather than claim 30.

Applicants acknowledge the references cited but not applied as being less relevant than those discussed above.

In view of the foregoing amendments and remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,
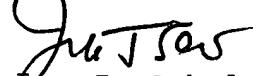
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